

Laparoscopic Antrectomy for a Proximal Duodenal Brunner Gland Hamartoma

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ABSTRACT

Background: Adenoma is the most common cause of duodenal polyps, while hamartomas are very rare. We present a patient with a preoperative histology proved diagnosis of isolated duodenal tubulovillous adenomatous polyp with high-grade dysplasia for whom we performed laparoscopic antrectomy.

Case Report: The patient was a 56-year-old male with vague upper abdominal pain. Investigations revealed a 3-cm x 3-cm mass arising from the duodenal mucosa with no evidence of extraserosal spread. Histopathology documented an adenomatous polyp with high-grade dysplasia, so a laparoscopic antrectomy was performed.

Results: The patient had an uneventful postoperative period, requiring only 2 doses of parenteral analgesics. He was discharged on the seventh postoperative day. The final histopathological findings were consistent with benign hamartoma. No recurrence has been reported after 14 months of follow-up with endoscopy.

Discussion: Many procedures have been described for polyps, such as endoscopic excision, duodenectomy, pancreatoduodenectomy, and laparoscopic polyp excision. In our patient, the decision to perform duodenectomy was based on the preoperative findings of a sessile tubulovillous adenomatous polyp with high-grade dysplasia. Histologically, the 2 entities can be identical, especially with the small tissue volume obtained from endoscopic biopsy.

Conclusion: Given these observations, antrectomy was probably ideal, because endoscopic excision would have been inadequate and even dangerous while pancreatoduodenectomy would have been too radical.

Key Words: Duodenal polyp, Tubulovillous adenoma,

Laparoscopic antrectomy, hamartoma.

INTRODUCTION

Adenomatous polyps are the most common duodenal polyps, the other types being inflammatory, adenoma, leiomyoma, lipoma, adenocarcinoma, carcinoid, lymphoma, leiomyosarcoma, and rarely hamartomas.¹ The Spigelman system, which describes 5 (0 to IV) stages, is used for rating the severity of duodenal polyposis.² Some form of excision, either endoscopic or surgical, for these conditions is mandatory. Many procedures have been described, such as local excision, duodenectomy, pancreatoduodenectomy, and a combination of endoscopy with laparoscopic polyp excision.^{3,4} We present a patient with a preoperative histology proved diagnosis of isolated duodenal tubulovillous adenomatous polyp with high-grade dysplasia for whom we performed laparoscopic antrectomy. The postoperative diagnosis was hamartoma. To our knowledge, laparoscopic antrectomy for a hamartomatous duodenal polyp has not been reported yet.

CASE REPORT

The patient was a 56-year-old male presenting with symptoms of vague upper abdominal pain. Routine blood and urine investigations were normal, including liver function tests. An ultrasonogram was also normal. Endoscopy revealed a sessile polypoidal mass in the posterior aspect of the first part of the duodenum (**Figure 1**), 4 cm proximal to the ampulla, from which a biopsy was taken. Free flow of bile was seen from the ampulla. A CT scan showed a broad-based 3-cm x 3-cm mass limited to the duodenal mucosa with no evidence of luminal obstruction, serosal infiltration, or lymph node involvement (**Figure 2**). Histopathology documented an adenomatous polyp with high-grade dysplasia. Based on the above findings, surgical intervention was planned. While under general anesthesia, the patient was placed in the modified lithotomy position with legs apart, skin sterilized and draped. The chief surgeon stood between the legs, the camera surgeon stood on the right, and the assistant surgeon and scrub nurse stood on the left side of the patient. The monitor

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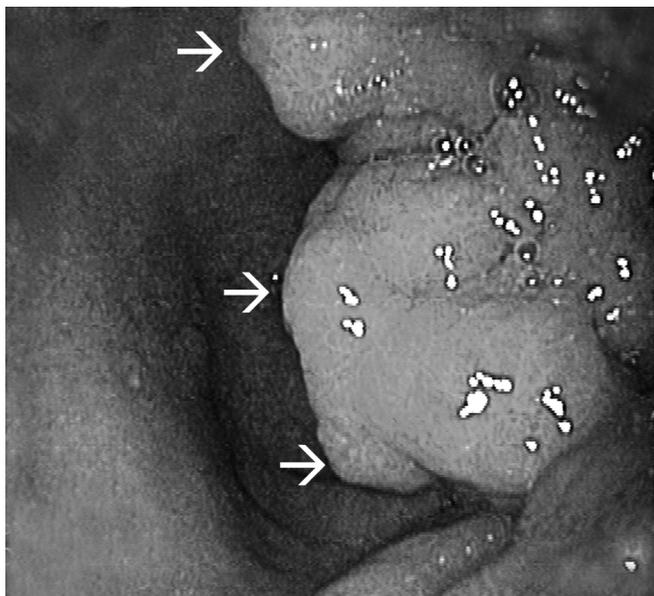


Figure 1. Endoscopic appearance of the polypoidal mass (arrows) in the first part of the duodenum.

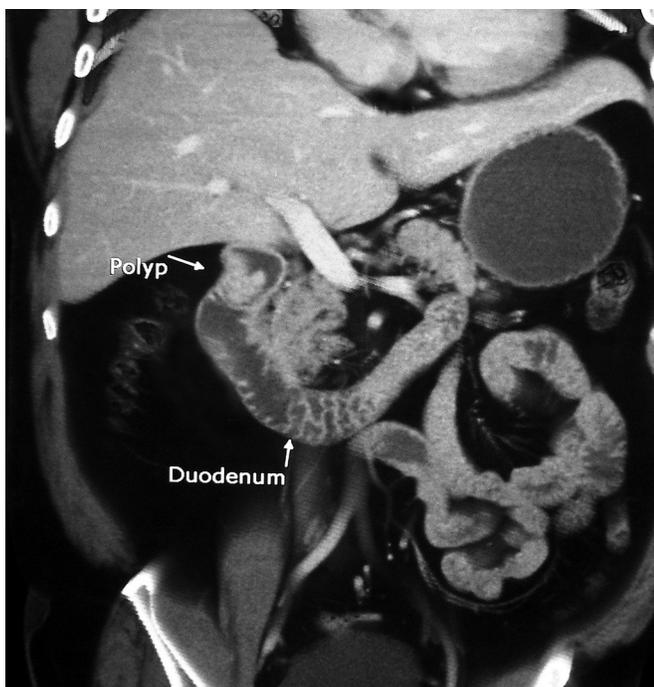


Figure 2. CT scan of the lesion.

was placed at the head-end of the patient. Pneumoperitoneum was created with a Veress needle placed in the umbilicus. The patient was placed in a 25-degree 'reverse' Trendelenburg position. The following port positions were used:

10-mm trocar, 3 cm above the umbilicus to the right of the midline (telescope).

12-mm disposable trocar in the left anterior axillary line at the left lumbar region (right working hand).

5-mm trocar below the subcostal margin along the right midclavicular line (left working hand).

5-mm trocar was placed in the epigastrium (retraction of the liver).

5-mm trocar in the left iliac fossa (caudal retraction of the transverse colon).

On diagnostic laparoscopy, the serosa of the duodenum was found to be normal, as was its mobility. No evidence was found of paraduodenal lymphadenopathy. The duodenum was completely Kocherized, and the right gastroepiploic vessels were divided with ultrasonic shears. Next, the gastrocolic ligament was divided to enter the lesser sac. The stomach and the partially mobilized duodenum were lifted up, and the right gastric artery divided between clips with ultrasonic shears. The duodenum was separated from the head of the pancreas by meticulously dividing the vascular tissue between them. At this point, an endoscope was introduced and a distal 2-cm margin was found to be achievable after occluding the lumen of the duodenum beyond the lesion with an endostapler and visualizing via the endoscope. A 45-mm (blue color) endo-GIA stapler was applied on the duodenum and fired 2cm to 3cm distal to the margin of the tumor, guided by

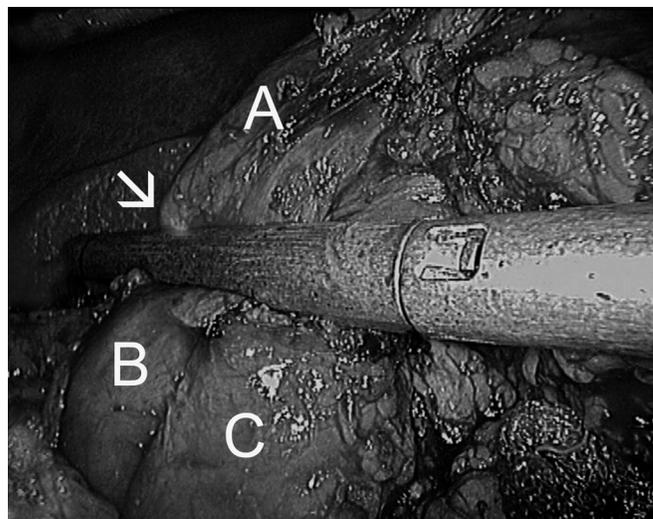


Figure 3. Stapler applied to distal margin: (A) antrum; (B) second part of duodenum; (C) head of pancreas; arrow points to tip of the endoscope.

the endoscope (**Figure 3**). After thus dividing the duodenum, the stomach was divided with a 60-mm (blue color) endo-GIA stapler, achieving an adequate proximal margin. Reconstruction was achieved by a conventional Rouxen-Y gastrojejunostomy with 60-mm blue endo-GIA stapler (**Figure 4**). The 12-mm port was used for inserting all the endostaplers. The resected specimen was placed in an endobag and delivered through the 12-mm port after enlarging it. Homeostasis was confirmed, a drain was kept, and the wounds closed.

RESULTS

The patient was allowed liquids orally from the third postoperative day (POD) onward, followed by a soft diet thereafter. He required only 2 doses of parenteral analgesics. No postoperative complications occurred, so he was discharged on the seventh POD. The resected specimen was cut open, and the macroscopic tumor-free margins were confirmed (**Figure 5**). After 14-month follow-up, endoscopy showed no evidence of recurrence. Histologically, the presence of mature but disorganized tissue composed mainly of lobules of Brunner glands lined by cylindrical clear mucous cells were seen. The muscularis propria is split with proliferation in the lamina propria. The overlying mucosa, which was pushed up by the submucosal lesion, was normal. Dilated ducts surrounded by inflammatory infiltrate with some lymphoid follicles were present. The proximal, distal, and radial margins of the resected specimen were negative for tumor, with no evidence of malignancy.

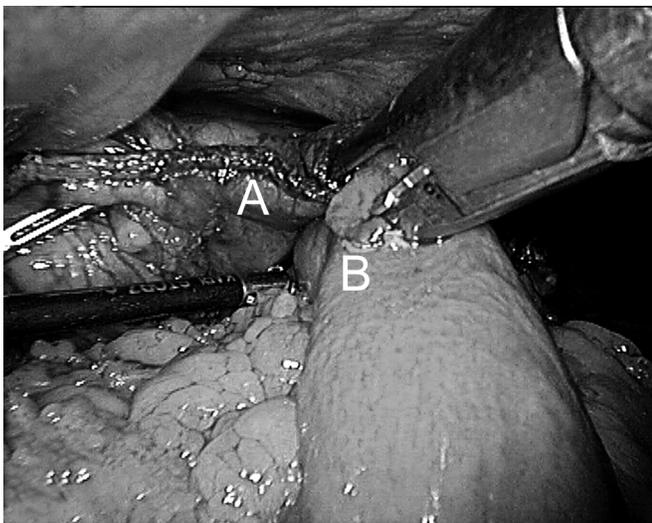


Figure 4. Gastrojejunostomy with endostapler: (A) divided end of antrum; (B) jejunum.

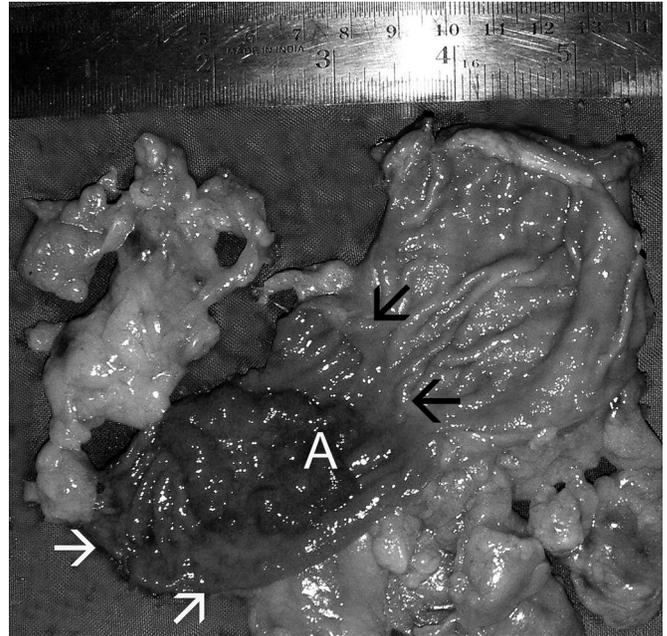


Figure 5. (A) Lesion. White arrows point to divided end of duodenum; black arrows point to pylorus.

DISCUSSION

Villous and tubulovillous polyps of the duodenum behave in a manner similar to those occurring in the colon and rectum, having both a high rate of recurrence after endoscopic excision and a high incidence of malignancy.⁵ These types of duodenal polyps are being reported more often now, probably because of the increasing use of upper gastrointestinal endoscopy for evaluation of patients with gastrointestinal complaints and for screening examinations of patients with polyposis syndromes. Biopsies correlated with the final pathology in 70% of patients in one study.⁶ In our patient, the preoperative endoscopic diagnosis was tubulovillous polyp with high-grade dysplasia (**Figure 6B**), whereas the postoperative diagnosis was hamartoma (**Figure 6A**). The probable reason for the preoperative diagnosis was this: the presence of regenerative changes due to underlying submucosal inflammation in a setting of normal villous projections of the duodenum. Also, the tissue for biopsy was taken endoscopically, which would have included only mucosa. Postoperatively, we knew that the hamartoma was arising from the submucosa and that the mucosa was normal.

Hamartomas are rare duodenal lesions and were first described by Cruveilhier at the end of the 19th century.⁷ About 50% of patients complain of epigastric pain, gastrointestinal hemorrhage, or rarely intussusception; in the

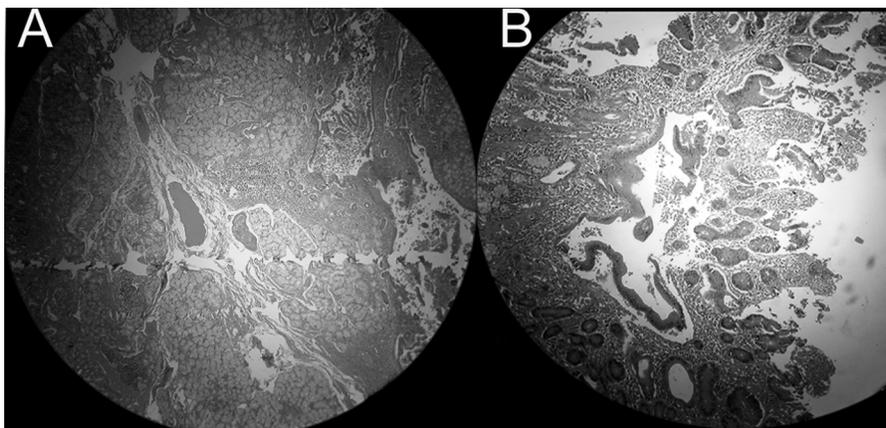


Figure 6. (A) Histology showing the presence of mature but disorganized tissue composed of Brunner glands, lined by cylindrical clear mucous cells, muscularis propria is split with proliferation in the lamina propria; (B) endoscopic biopsy findings of regenerative changes due to underlying submucosal inflammation in a setting of normal villous projections suspicious of polyp with high-grade dysplasia.

remaining cases, hamartoma is an incidental finding.^{8,9} It usually presents as a pedunculated polyp located in the first part of the duodenum, measuring from 0.7 cm to 12 cm (average 4 cm), similar to our patient on both counts. Hamartoma is a benign lesion, and very few cases of Brunner gland hamartoma have been reported in association with epithelial dysplasia, duodenal adenocarcinoma, and carcinoid tumors.¹⁰ Prior to treatment, all patients diagnosed with duodenal polyps should undergo screening for colonic polyposis, because duodenal adenomas are common in patients with familial adenomatous polyposis (30% to 70%) and vice versa.¹¹ The use of endoscopic retrograde cholangiopancreatography (ERCP) to evaluate biliary duct involvement in patients with ampullary lesions or altered liver function tests is mandatory prior to surgery. ERCP was not needed in our patient, as jaundice was absent and the bile ducts were not dilated. Endoscopic ultrasound is helpful in any sessile lesion where malignant invasion is suspected.

Treatment options (flow chart) for duodenal polyps are either endoscopic, surgical, or a combination of both. Endoscopic intervention includes snare excision, thermal ablation, argon plasma coagulation (APC), and photodynamic therapy (PDT).¹² Most of the studies on endoscopic therapy reported on in the literature use snare excision.¹³ In addition, thermal ablation, APC, or PDT may be used with equally good outcomes.¹⁴ We chose surgery instead of endoscopic excision for our case for the following reasons. The size of the lesion in our patient was 3 cm x 3 cm, sessile with a broad base and histological evidence of high-grade dysplasia, which qualifies the lesion as Spigelman stage III. The literature reveals that endoscopic

treatment is usually insufficient to guarantee a polyp-free duodenum and is fraught with complications.¹⁵ Recurrence rates are usually low in isolated duodenal lesions like our case, though recurrence of duodenal polyps of FAP patients treated endoscopically are unacceptably high (50% to 100%).¹⁶ Surgical options used to treat duodenal polyposis include local surgical treatment (duodenotomy with polypectomy and/or ampullectomy), pancreas and pylorus-sparing duodenectomy, and pancreaticoduodenectomy.¹⁷ Laparoscopic polypectomy via a gastrotomy assisted by endoscopy has also been reported.^{18,19} Antrectomy (**Figure 7**) has never before been described for duodenal polyps. No randomized studies have been reported in the literature to help guide surgical selection, though studies have shown that local excision of duodenal adenomas is associated with a high risk of local recurrence, so duodenectomy or pancreaticoduodenectomy should be considered. Pancreaticoduodenectomy is the appropriate treatment for Spigelman stage IV duodenal polyposis and can be considered for stage III.²⁰ Surgical polypectomy alone fails to guarantee a polyp-free duodenum and also carries a risk of postoperative complications, whereas pancreatoduodenectomy eliminates the risk of duodenal cancer, though with a high morbidity rate.²¹ Even though the postoperative diagnosis in our patient was benign hamartoma, polypectomy would have been impossible to achieve as the lesion had a wide base, and too much duodenal tissue would have to be removed to achieve clearance. Whipple's procedure would have been excessive and amounted to "overtreatment." Antrectomy is ideal in cases like ours, where a solitary polyp not amenable to endoscopic excision is located proximal to

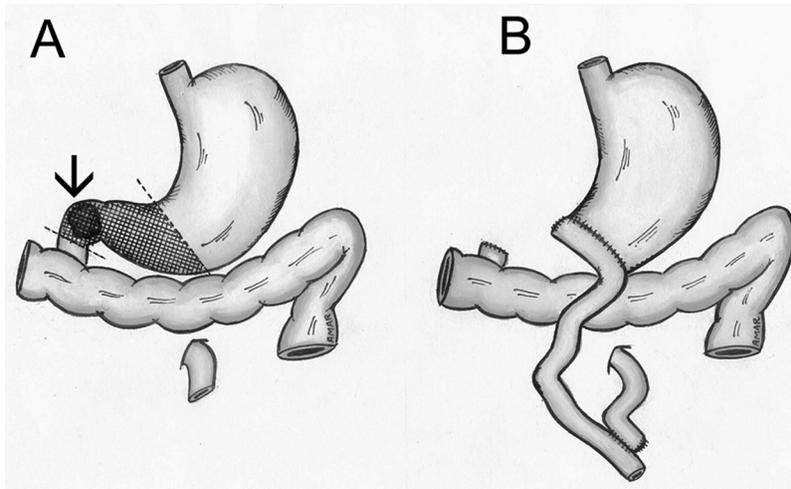


Figure 7. (A) Shaded area showing the extent of resection and tumor margins (arrow); (B) completed Roux-en-Y anastomosis.

the ampulla. The pylorus had to be sacrificed because the proximal margin of the tumor was only 1cm from the sphincter, and pylorus preservation may have resulted in inadequate clearance. We prefer Roux-en-Y anastomosis to Billroth II, as the former is associated with a much lower risk of postgastrectomy syndrome.

CONCLUSION

Duodenal polyps are mostly asymptomatic, and optimizing adequate treatment for these patients can be quite challenging. We believe that even though antrectomy is not a routine indication for duodenal polyps, it was the procedure of choice in our case. Laparoscopic surgery is an attractive option, with all the conventional benefits of minimal access.

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